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CONCEPT PAPER

CLEAN COMBUSTION TECHNOLOGY WORKSHOP

...a collaborative effort among Mexican Ministry of Foreign Affairs, USAID, and IIE

OBJECTIVES:

1 To disseminate advances in clean combustion technologies to Central American electric utilities and select end users
2 To provide a forum to catalyze interest and use of clean combustion technologies in Central America
2 To assist in developing clean technology initiatives to mitigate emissions and improve economic integration in Central America

BACKGROUND:

Following the second Summit of the Americas, the governments of Mexico, United States of America, and Canada agreed to cooperate on international development issues of mutual interest. This understanding is embodied in the **MEMORANDUM OF UNDERSTANDING ON INTERNATIONAL DEVELOPMENT AND COOPERATION** and signed in July 1999, by Rosario Green, Secretary of Foreign Relations of the United Mexican States and Madelene Albright, Secretary of State of the United States of America on behalf of the two governments. This MOU states, in part, "The Participants may work together...especially in those areas of sustainable development and integrated natural resource management, health, education, poverty alleviation, and economic integration. In this respect, the Participants intend to provide the greatest support possible to the development and transformation of Central American countries, in particular in tasks intended to the reconstruction of those countries affected by recent natural disasters."

JUSTIFICATION:

Mexico's Institute for Electrical Research (IIE), and USAID are well positioned to provide support to meet this need. IIE is at the forefront of researching, developing and screening clean combustion technologies for application in appropriate industries. USAID has considerable experience in technology transfer and catalyzing its use. Both organizations seek to mitigate harmful environmental emissions that contribute to global warming and increase the availability of cleaner power production in Central America. Both organizations recognize the benefits of collaborating to pursue common interests in Central America.

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Discussions between IIE and USAID regarding the possibility of a collaboratively sponsored workshop on clean combustion technologies for influencing regional power technology decisions began several years ago. Unfortunately, program uncertainties within USAID's organization caused a delay in advancing this effort. These issues are now resolved within USAID.

Central America's power sector could benefit from IIE and USAID support. The seven nations have 2,679 MW of thermal generation capacity, representing some 44% of the region's total, which stood at 6,074 MW in 1998 (see Table 1). In the future, it is likely that the share of thermal generation in the region's total capacity will increase, as new gas-fired generation stations are built to keep pace with rising demand and growing consumption. Since existing thermal capacity in the countries affected by the conflicts of the 1970s and 80s was installed before that period, it tends to be technologically dated, less efficient and more polluting.

Table 1

Total Electricity Installed Capacity (MW), 1998 (OLADE)

	Total	Hydro	Coal	Gas	Oil/Diesel	Geothermal
Belize	35	10	0	0	25	0
Costa Rica	1438	990	0	0	281	166
El Salvador	959	404	0	0	450	105
Guatemala	1358	520	0	0	833	5
Honduras	769	434	0	0	334	0
Nicaragua	479	140	0	0	269	70
Panama	1037	550	0	0	487	0
Central America Total	6074	3048	0	0	2679	346
(%)		50	0	0	44	6

Accordingly, Central American utilities could benefit from access to information about the range of combustion technologies available to enhance performance, reduce pollution, and extend asset life, as they update and modernize existing generation stations. Furthermore, several countries, including El Salvador, Guatemala, Honduras, Nicaragua and Panama, have taken steps to privatize and restructure electricity markets (see Table 2). Costa Rica is also actively considering deregulation. As private utilities in these countries seek to enhance competitiveness, they will benefit from access to information regarding low-cost, performance-enhancing technologies to extend the life and performance of existing assets. In addition, experience in the region and elsewhere suggests that the deregulation process increases thermal power solutions, such as Guatemala's proposed 150 MW coal-fired project, or a recent award in Nicaragua for a 50 MW diesel project. This trend suggests that the introduction of cleaner combustion technologies could have a considerable impact on mitigating greenhouse gas emissions in the region.

Table-2

Private Thermal Power Plants in Operation	
Belize	No Information
Costa Rica	None
El Salvador	140 MW Diesel, Nejapa Power Co
Guatemala	110 MW Diesel (barge mounted), Puerto Quetzal 78 MW Oil, Alborada Power Station 40 MW, Generadora Electrica del Norte 40 MW, Diesel, Escuintla 6.4 MW Thermal, El Petan
Honduras	80 MW Diesel, Electricidad de Cortes SRL de CV 80 MW Heavy fuel oil, Pavana
Nicaragua	51MW Heavy fuel oil, Tipitapa 30 MW Fuel Oil, Puerto Sandino
Panama	75 MW Residual Oil, Petroelectrica Panama 42 MW Thermal, COPESA 20 MW Thermal, Petro Terminales de Panama

Source: International Private Power Quarterly, Third Quarter, 1999

IIE and USAID have successfully collaborated in the past on common issues. In consideration of the MOU, past collaborative efforts, and our mutual interests, IIE and USAID will join forces to offer regional decision-makers clean combustion technology options.

This Workshop will provide a forum to address some of these issues through presentations and discussions.

WORKSHOP OVERVIEW:

Sponsors are the Mexican Ministry of Foreign Affairs, USAID, and IIE. The workshop would take place at IIE's conference facility in Cuernavaca over two days with an additional day for a site visit on mutually agreeable dates. It is envisioned that about 20 technical and planning officials from Central American utilities and select end users would participate. About a half dozen technologies would be presented. The technologies would be mutually agreed upon between IIE and USAID. The workshop presenters would bear the cost of preparation and travel expenses. IIE and USAID would approach Mexico's Ministry of Foreign Affairs to secure travel and per diem funds for the Central American participants. IIE will be the secretariat for the workshop. USAID would fund IIE's administrative, organizational, and preparation costs. IIE would provide conference facilities.

TECHNOLOGIES SELECTED FOR PRESENTATION:

The presentations by IIE and US specialists identified by USAID will cover technologies most relevant to the needs of Central American utilities, given their existing mix of generation technologies and fuels, as well the expansion plans and infrastructure additions that will tend to increase regional energy integration.

Central America's thermal generation stations include a substantial amount of fuel-oil fired and diesel-fired capacity. Current and future expansion plans, meanwhile, feature a substantial amount of new gas-fired capacity. Gas is not available within the region, but most likely be imported from Mexico. Recently, Mexico and Guatemala announced plans to build a pipeline to ship natural gas from the Gulf of Mexico to Guatemala, with possible connections to the rest of the region. Further, the entire region is embarked on a project supported by the Inter-American Development Bank (IDB) to construct a high-voltage interconnection, known as SIEPAC (*Sistema de Interconexión Eléctrica para América Central*), which will facilitate distribution of electricity throughout the region.

With the region's current and future thermal generation technology mix is heavily weighted toward diesel, fuel-oil and natural gas-based combustion, as noted in Table 1 & 2, the IIE/USAID clean combustion workshop will focus on advanced technologies for these types of stations.

PARTICIPANTS:

Workshop participants will include senior operations and engineering personnel from the national utilities or major private utilities in each of the seven countries in the region. The group may also include representatives of the energy ministries or related agency from the national governments of each country. It is anticipated that some 15 to 25 participants from Central America will attend. In addition, another 10 to 15 participants from the IIE, USAID and the participating technology companies in the US, bring the total number of participants in the seminar to between 25 and 40.

WORKSHOP OUTLINE *

FIRST DAY

1. Welcoming
2. Sponsors Opening Comments
3. Keynote address
4. Break
5. Review of Combustion Principles and Recent Developments
6. One technical presentation/discussion
7. Lunch
8. Two concurrent technical presentations/discussions
9. Wrap-up

SECOND DAY

1. Two concurrent technical presentations/discussions
2. Break
3. Two concurrent technical presentations/discussions
4. Lunch
5. Plenary session & panel discussion
6. Closing Remarks

THIRD DAY

1. Site visit to see selected technology application

* Assumes there are sufficient country representatives to maintain concurrent technical presentations

* To be worked out with IIE